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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jan Nuyens

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CLARK & ELBING LLP
101 FEDERAL STREET
BOSTON, MA 02110

EXAMINER

WANG, CHUN CHENG

ART UNIT

PAPER NUMBER

4171

NOTIFICATION DATE

DELIVERY MODE

08/12/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentadministrator@clarkelbing.com

Office Action Summary	Application No. 10/534,677	Applicant(s) NUYENS ET AL.	
	Examiner Chun-Cheng Wang	Art Unit 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-49 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 31-49 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/12/2005, 09/02/2005</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 31-41 and 49 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kornena et al. (RU 2099974 C1, original patent with translation) in view of Wirtschaftsprüfungsgesellschaft et al. (GB 1171068).

4. Regarding claim 31: applicants recite an emulsification method comprising flowing, conducting or circulating a pre-mix of two or more immiscible liquids through one or more magnetic fields under conditions to emulsify said pre-mix, wherein said pre-mix of two or more immiscible liquids is milk or comprises at least a hydrophilic liquid and at least a lipophilic liquid, wherein said lipophilic liquid is selected from the group consisting of edible oils, fats, fatty acids and esters thereof formed from a saturated or unsaturated linear or branched aliphatic alcohol having from 1 to 18 carbon atoms or from a saturated or unsaturated linear or branched aliphatic polyol having from 2 to 6 carbon atoms or from a polyethyleneglycol or polypropyleneglycol or methoxy polyethyleneglycol having a molecular weight up to 1,500; natural or synthetic, saturated, mono-unsaturated or polyunsaturated acids having from 8 to 24 carbon atoms and optionally one or more functional groups such as hydroxy or epoxy; lipids including mono- and polyacylglycerols, phosphoglycerides, sphingolipids, amino-amidines, and mixtures thereof, and wherein the linear flow rate of said liquids through each said magnetic field is between 0.25 and 25 m/s.

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Kornena et al. disclose a method involves preparation of milk-mustard mixture emulsion that is homogenized in electromagnetic field (Abstract).

Kornena et al. are silent on flowing, conducting or circulating the emulsion and the linear flow rate of the liquids through each magnetic field.

5. Regarding claims 32-36 and 40-41: applicants recite wherein said hydrophilic liquid is an aqueous or nearly-aqueous phase (claim 32); said pre-mix further comprises one or more viscosity regulators and/or one or more emulsifiers or emulsion stabilizers or surfactants (claim 33); said pre-mix further comprises solid particles suspended therein (claim 34); the strength of each said magnetic field is at least 2,000 gauss (claim 35); said hydrophilic liquid is an aqueous or nearly-aqueous phase and wherein the proportion of said lipophilic liquid in said pre-mix is within a range from 3 to 60% by weight (claim 36); flowing said liquids through said magnetic field(s) is effected at a temperature between 10°C and 90°C (claim 40); and an industrial process including an emulsification method according to claim 31 as a process step (claim 41.)

6. Kornena et al. disclose production of mayonnaise which is based on preparation of milk-mustard, i.e. solid particles, mixture, adding emulsifier, and acetic-salt solution, mixing, introducing vegetable oil to produce coarsely-dispersed emulsion, and homogenizing. To improve results, additional emulsifier is added, consisting of food-grade vegetable phospholipids, i.e. lipophilic liquids, which are initially soaked in water, i.e. hydrophilic aqueous liquid, with mixing, at 35-60°C, at the ratio of phospholipids to water (1 : 3) - (1 : 10), i.e. 9-25 % of phospholipids, for 0.5-2.0 hours. Homogenizing is conducted in electromagnetic field with magnetic induction 0.1-0.5 T (1000-5000 gauss, 1 Tesla = 10^4 gauss) (Abstract).

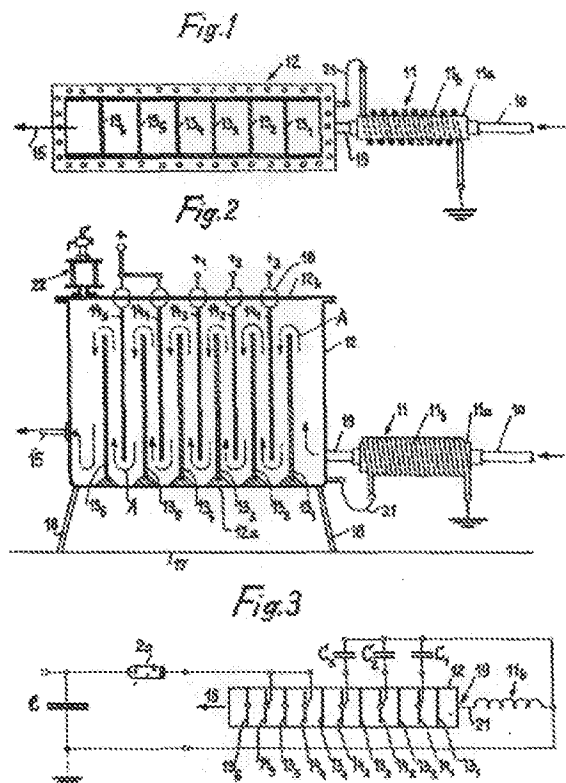
It is obvious that the method disclosed by Kornena et al. could be applied as part of an industrial process.

7. Regarding claims 37-39 and 49: applicants recite wherein wherein said premix of two or more immiscible liquids is re-circulated from 10 to 10,000 times through each said magnetic field (claim 37); the linear flow rate of said liquids through each said magnetic field is between 0.6 and 5 m/s (claim 38); the residence time of said fluid through each magnetic field is between 60 microseconds and 10 seconds (claim 39); and the pre-mix of two or more immiscible liquids is milk, whereby the average size of the smallest micelles or particles contained in milk is decreased by at least 50% (claim 49.)

Kornena et al. are silent on the liquids is re-circulated, the linear flow rate of the liquids through each magnetic field, the residence time of the fluid through each magnetic field, and 50% decrease of the average size of the smallest micelles.

8. It is clear that Kornena et al. teach all the limitations in claims 31-40 and 49 except (1) flowing, conducting or circulating the emulsion; (2) the linear flow rate of the liquids through each magnetic field is between 0.6 and 5 m/s; (3) recirculation of the liquids from 10 to 10,000 times through each said magnetic field; (4) the residence time of said fluid through each magnetic field is between 60 microseconds and 10 seconds; and (5) 50% decrease of the average size of the smallest micelles.

9. Regarding point (1): Wirtschaftsprüfungsgesellschaft et al. disclose a method to pasteurize milk or beer (page 2, lines 10-11) and/or sterilize or stabilize so that they will keep longer (shelf life) (page 1, lines 25-27). The dispersion was exposed to strong electromagnetic force(s) in an induction coil (claim 1) and then through a number of cascade vessels connected in parallel and/or in series (claim 17.) The cascade vessel, see the following figures, includes a high voltage capacitor and two electrodes for exposing the dispersion to displacement current field(s) by force-wise discharge to strong electromagnetic force(s) in the induction coil (claim 12). The apparatus is characterized by a number of cascade vessels connected in parallel and/or in series and formed a loop (page 2, lines 94-96.) The apparatus has the advantage of increasing the qualitative and quantitative performance and efficiency of the plant and of varying them in the optimum manner to suit particular case (page 2, lines 100-104.)



10. Regarding points (2), (3), (4) and (5): Wirtschaftsprüfungsgesellschaft et al. are silent on the specific operation parameters, but they suggest changing the number of cascade vessels connected in the optimum manner to suit particular case in their claims. And thus changes the total magnetic force(s) or energy necessary to act upon the emulsion to achieve 50% average size reduction. The total energy necessary to emulsify liquids qualitatively and quantitatively varies with different components and compositions. The number of recirculation, linear flow rate of the liquids and the residence time through the magnetic field all contribute to the total energy supplied to the emulsion and then the size reduction of the micelles. The linear flow rate F and

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residence time RT through the magnetic field depend on each other once the distance D the liquids travel through the magnetic field is fixed, i.e. $D = F \times RT$, or vice versa.

The caselaw has held that “Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955.) Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to achieve the claimed average size reduction by routine optimization to set the linear flow rate/residence time and number of recirculation and thereby obtain the present invention.

11. Claims 42-43 and 47-48 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kornena et al. (RU 2099974 C1) in views of D’Agostino et al. (WO 99/07231).

12. Regarding claims 42-44 and 47-48: applicants recite an industrial process according to claim 41, wherein said process further comprises one or more post-processing steps performed following the emulsification step (claim 42); wherein said process further comprises a drying step for at least partially removing the hydrophilic liquid present in the emulsification step (claim 43); wherein said process further comprises a cooling step or a heating step (claim 47); and wherein said process further comprises a freeze-drying step (claim 48.)

13. The claims are dependent of claim 41 and the disclosure of Kornena et al. is adequately set forth above and is incorporated herein by reference.

Kornena et al. are silent on all the limitations in claims 42-43 and 47-48.

14. D’Agostino et al. disclose an apparatus and method of magnetically treating a fluid, particularly milk. And the method includes treating liquid milk product magnetically at process points upstream of equipment such as evaporators, i.e. drying, in the production of powdered milk from liquid milk (Abstract). The liquid milk is transfer to a dryer (to manufacture powdered milk.) (page 7, line 3.)

D’Agostino et al are silent on the specific type of dryer to dry the liquid milk.

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Freeze-drying is a dehydration process typically used to preserve a perishable material and is commercially available.

15. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize the teachings from both Kornena et al. and D'Agostino et al. to combine the method of emulsification for smaller micelles size by magnetic field treatment with evaporation and freeze-drying of the liquid milk to manufacture powdered milk.

16. Claims 44-46 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kornena et al. (RU 2099974 C1) in views of Southwick et al. (US 5985979).

17. Applicants recite an industrial process according to claim 41, wherein said process further comprises one or more steps of controlling the size of droplets or micelles produced during the emulsification step (claim 44); wherein process further comprises one or more steps of controlling the size of droplets or micelles produced during the emulsification step and wherein said size controlling step is performed by dynamic light scattering analysis (claim 45); and wherein said process further comprises a sonication step (claim 46.)

18. The claims are dependent of claim 41 and the disclosure of Kornena et al. is adequately set forth above and is incorporated herein by reference.

Kornena et al. are silent on all the limitations in claims 44-46.

Southwick et al. disclose a mixture was subjected to ultrasound cavitation causing emulsification of the cement in the aqueous phase. The mean drop size of the cement emulsion after sonification was measured by dynamic light scattering to be 0.43 microns (Example 3).

19. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize the teachings from both Kornena et al. and Southwick et al. to use sonification to further aid the emulsification process

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and use dynamic light scattering analyzer to determine whether the micelles size is right for specific need and then optimize the operation parameters.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Cheng Wang whose telephone number is (571)270-5459. The examiner can normally be reached on Monday to Friday w/alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ling-Siu Choi/
Primary Examiner, Art Unit 1796

Chun-Cheng Wang
Examiner, Art Unit 4171

/ccw/